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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,347	03/02/2004	J. Bradford Cole	EVAL-102J	2388
7590		07/28/2005	EXAMINER	
Iandiorio & Teska		DOLE, TIMOTHY J		
260 Bear Hill Road		ART UNIT		
Waltham, MA 02451-1018		PAPER NUMBER		
		2858		

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/791,347

Applicant(s)

COLE, J. BRADFORD

Examiner

Timothy J. Dole

Art Unit

2858

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-66 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 5, 16-18, 20, 21, 34-36, 38-40, 43, 45, 46, 57-59, 61, 62 and 64-66 is/are rejected.
- 7) ☒ Claim(s) 3, 6-15, 19, 22-33, 37, 41, 42, 44, 47-56, 60 and 63 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 64 and 65 are rejected under 35 U.S.C. 102(b) as being anticipated by Adamian et al. (US 6,653,848).

Referring to claims 64, Adamian et al. discloses a system for characterizing a device under test, the system comprising: an input subsystem configured to inject a signal into the device under test and to measure the response of the device under test (column 11, lines 2-6); and a routine for automatically determining the frequency domain impedance of the device under test by constructing an s-parameter matrix and calculating the real and imaginary portions of the impedance based on the s-parameter matrix (column 51, lines 56-63).

Referring to claim 65, Adamian et al. discloses the system as claimed, further including a routine for converting the frequency domain impedance to a time domain impedance by performing an inverse Fourier transform on the complex impedance (column 11, lines 2-20 and column 51, lines 56-63).

3. Claims 1, 2, 4, 5, 16-18, 20, 21, 34-36, 38-40, 43, 45, 46, 57-59, 61, 62, and 66 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Adamian et al.

Referring to claims 1, 2, 4, 5, 20, 38, 43, 45, 46, 61, and 66, Adamian et al. discloses a system and method of characterizing a device under test, the method comprising: determining the impedance of the device under test in the frequency domain by constructing an s-parameter matrix and calculating the real and imaginary portions of the impedance based on the s-parameter matrix (column 51, lines 56-63); converting the frequency domain impedance of the device under test to a time domain by performing an inverse Fourier transform on the determined complex impedance (column 11, lines 2-20 and column 51, lines 56-63).

Adamian et al. does not disclose calculating the voltage noise of the device under test by convolving the time domain impedance with a predetermined current in the time domain.

It would have been obvious to one skilled in the art at the time of the invention to calculate the voltage noise by convolving the time domain impedance with a predetermined current in the time domain since the calculation is a simple adaptation of Ohm's law, where  $V=I \times R$ . Furthermore, Adamian et al. discloses convolution of data in the time domain to determine the output signal due to the convolution of the s-parameter data with impulse function (column 11, lines 20-29).

Referring to claims 16-18, 34-36, 57-59, Adamian et al. discloses the method and system as claimed in which the device under test is a printed circuit board, integrated circuit package or interconnect package (column 1, lines 17-21 and 54-62).

Referring to claims 21, 39, 40 and 62, Adamian et al discloses the method and system as claimed in which determining the impedance includes injecting a signal into

the device from one or more test ports of an analyzer and measuring the response of the device (column 2, lines 28-43).

*Allowable Subject Matter*

4. Claims 3, 6-15, 19, 22-33, 37, 41, 42, 44, 47-56, 60 and 63 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to show the state of the art with respect to characterizing a device under test.

USPN 5,946,482 to Barford et al.: This patent shows an apparatus for using frequency domain S-parameter data in the time domain by applying inverse Laplace Transforms.

USPN 5,502,392 to Arjavalasingam et al.: This patent shows a method for determining impedance from S-parameter data in the frequency domain.

USPN 4,861,767 to Cannon et al.: This patent shows a vector network analyzer for taking measurements in the frequency domain and converting them into the time domain.

*Conclusion*

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Dole whose telephone number is (571) 272-2229.

The examiner can normally be reached on Mon. thru Fri. from 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571) 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TJD

  
**ANJAN DEB**  
**PRIMARY EXAMINER**